Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1 (currently amended) A method for single molecule identification of a target DNA molecule in a random coil state comprising the following steps:

a) attaching an optically distinguishable material to a DNA sequence recognition unit, wherein said DNA sequence recognition unit identifies a specific sequence of DNA in said target DNA molecule, wherein said optically distinguishable material comprises colored microparticles;

b) hybridizing at least ~~one~~ two distinct DNA sequence recognition ~~unit~~ units to said target DNA molecule in a random coil state to form a hybridized DNA complex in a random coil state;

c) passing said hybridized DNA complex in a random coil state in a fluid carrier from a reservoir in a microfluidic device through a narrow channel to cause an acceleration of fluid flow through said channel, thereby causing said hybridized DNA complex to extend into a substantially linear configuration; and

d) detecting two or more distinct said optically distinguishable material on said at least ~~one~~ two distinct DNA sequence recognition ~~unit~~ units in a sequential manner along said substantially linear hybridized DNA complex;

e) determining the sequential order of said optically distinguishable material on said at least ~~one~~ two distinct DNA sequence recognition ~~unit~~ units;

f) determining the sequential order of said specific sequence of DNA from said sequential order of said optically distinguishable material on said at least ~~one~~ two distinct DNA sequence recognition ~~unit~~ units, thereby identifying said target DNA molecule.

2 (cancelled)

3 (currently amended): The method of claim 1 wherein said ~~optically distinguishable material comprises~~ colored microparticles comprise microparticles having different shapes.

4 (currently amended): The method of claim ~~2~~ 1 wherein said colored microparticles comprise dyes, dye aggregates, pigments or nanocrystals.

5 (original): The method of claim 1 wherein said DNA sequence recognition unit comprises DNA, DNA fragments, synthetic oligonucleotides or peptide nucleic acids.

6 (original): The method of claim 1 wherein said DNA sequence recognition units comprise any protein scaffold or synthetic molecular moiety capable of recognizing a specific DNA sequence.

7 (original): The method of claim 1 wherein said narrow channel of said microfluidic device has a width or depth of from about 0.1 μm to about 500 μm.

8 (original): The method of claim 1 wherein said narrow channel of said microfluidic device has a width or depth of about 1 μm to about 300 μm.

9 (cancelled)